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Conference Abstract

The Global Omics Observatory Network: Shaping standards for long-term molecular observation

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Abstract

Founded in early 2018 through a collaboration between the EU Horizon 2020 AtlantOS project and Agriculture and Agri-Food Canada, the Global Omics Observatory Network (GLOMICON) is federating long-term ecological observatories employing "omic" (e.g. metagenomcis, metatranscriptomics, metabolomics) techniques to assess biodiversity across scales. GLOMICON is the consolidation of a series of meetings and ad hoc efforts (e.g. the multi-omic sessions at TDWG 2017) and seeks to mainstream multi-omic observation in existing observatory systems. GLOMICON currently networks >40 organisations observing biodiversity from urban and agricultural systems to the depths of the polar ocean. Coordination through GLOMICON allows the long-term observatory community to develop and align their needs, thus approaching standards bodies including the Genomic Standards Consortium (GSC), the Biodiversity Information Standards (TDWG) organisation, and the Earth Science Information Partners (ESIP) with a common voice. Further, as more ecological observatories begin to adopt molecular techniques, GLOMICON offers a community building best practices to facilitate their operationalisation. Vitally, GLOMICON interfaces with established observation networks via organisations such as UNESCO/IOC Global Ocean Observing System through its Biology and Ecosystems Panel. Such interactions have provided invaluable guidance on how to

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approach global standardisation in a firmly operational and multi-stakeholder environment, while ensuring innovative science can thrive.

In this contribution, we will deliver a briefing on GLOMICON's current priorities and efforts to shape molecular standards to become fit-for-purpose in observatory-grade settings. In particular, we will focus on our interactions with other key omic observing networks, including the Genomic Observatories Network, and our joint strategies to progress towards an distributed yet integrated system. We will also note practical steps the network has taken to systematise protocols and best practices, (bio)informatics routines, observatory parameters, and global intercalibration through sample exchange. Lastly, we will note the network's upcoming priorities, which feature the need to develop strategies for sustainability and the extension of coordination efforts between national, regional, and global Earth observation systems.

Keywords

omics, observatory, network, eDNA, metagenomics, metatranscriptomics, standards, best practices

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